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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,168	01/04/2002	Burkhard Standke	211599US0	1767
22850	7590	05/18/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			FEELY, MICHAEL J	
			ART UNIT	PAPER NUMBER
			1712	
DATE MAILED: 05/18/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/035,168

Applicant(s)

STANDKE ET AL.

Examiner

Michael J. Feely

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-16, 18-32, 46, 50 and 51 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 4-16, 18-32, 46, 50 and 51 is/are rejected.  
7) ☒ Claim(s) 5 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1103.  
4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 0505.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. After further consideration, the finality of the Office action mailed on December 28, 2004 has been withdrawn. The after-final amendment of April 28, 2005 has been entered.

***Pending Claims***

2. Claims 4-16, 18-32, 36-46, 50, and 51 are pending.

***Previous Claim Objections***

3. The objection to claims 7 and 23 has been overcome by amendment.

***Previous Claim Rejections – 35 USC § 112***

4. The rejection of claims 13 and 29 under 35 USC 112, second paragraph, has been overcome by amendment.
5. The rejection of claims 4-16, 18, 19, 36-46, and 50 under 35 USC, second paragraph, has been overcome by amendment.
6. The rejection of claims 17 and 47-49 has been rendered moot by the cancellation of claims 17 and 47-49.

***Previous Claim Rejections – 35 USC § 102/103***

7. The rejection of claims 17 and 47 under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Humphrey, Jr. (US Pat. No. 4,235,954) has been rendered moot by the cancellation of claims 17 and 47.

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***Previous Allowable Subject Matter***

8. The indicated allowability of claims 4-16, 18-32, 36-46, 50, and 51 is withdrawn in view of the newly discovered reference(s) to Popall et al. (US Pat. No. 5,734,000). Rejections based on the newly cited reference(s) follow.

9. The previously indicated allow-ability of claims 48 and 49 has been rendered moot by the cancellation of claims 48 and 49.

***Claims Rejections – 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 20-32 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 has been amended to include the following language: “wherein the organofunctional group of silicon compound A is reacted with the surface of the organofunctional substrate by the addition of an acid or base and *in the presence of a free radical generator or a free radical generator, or both, and a solvent*”. It is unclear what is meant by this limitation, and it appears that the new language (“*,or both,*”) should not have been added.

***Claim Objections***

12. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

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claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitations of claim 5 are already incorporated into claim 36.

***Claims Rejections – 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 4-11, 13-16, 18-27, 29-32, 36-46, 50, and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Popall et al. (US Pat. No. 5,734,000).

Regarding claims 20-27, 29-32, and 51, Popall et al. disclose: **(20)** a process for modifying the surface of an organofunctional substrate (Abstract; column 10, lines 1-20):

- Reacting an organofunctional group of a silicon compound A with a surface of an organofunctional substrate to form a polar treated surface (column 10, lines 1-20; column 8, lines 23-37), wherein the silicon compound A comprises at least one organofunctional group and at least one chloro, alkoxy, carboxy or hydroxyl group, and further wherein said silicon compound A may react to form a polymer bearing silyl groups (column 3, line 23 through column 4, line 9; column 5, lines 20-44); then
- Applying to the polar treated surface an organofunctional silicon compound B (column 10, lines 1-20; column 8, lines 23-37), wherein the silicon compounds A and B may be identical or different, the silicon compound B bears at least one chloro, alkoxy, carboxy or hydroxy group (column 3, line 23 through column 4, line 9), and the silicon compound B reacts with the polar surface (column 10, lines 1-8)

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wherein the organofunctional group of the silicon compound A is reacted with the surface of the organofunctional substrate by the addition of an acid or base (column 6, lines 37-67) and in the presence of a free radical generator or a free radical generator and a solvent (column 8, lines 38-43; column 9, lines 19-67), and

wherein the acid or base is selected from the group consisting of HCl, HNO<sub>3</sub>, HCOOH, CH<sub>3</sub>COOH, H<sub>3</sub>PO<sub>4</sub>, H<sub>2</sub>SO<sub>4</sub>, and amine, Na<sub>2</sub>CO<sub>3</sub>, NaOH, NH<sub>4</sub>Cl, CH<sub>3</sub>COONa, and CH<sub>3</sub>COONH<sub>4</sub> (column 6, lines 56-67);

(21) wherein the organofunctional group of the silicon compound A is a linear, branched or cyclic alkyl group having from 1 to 20 carbon atoms and may optionally be substituted with a halogen or an alkenyl group having from 2 to 16 carbon atoms (column 5, lines 20-44);

(22) which comprises the addition of an acid selected from the group consisting of HCl, HNO<sub>3</sub>, HCOOH, CH<sub>3</sub>COOH, H<sub>3</sub>PO<sub>4</sub>, and H<sub>2</sub>SO<sub>4</sub> (column 6, lines 56-67);

(23) wherein the free radical generator is selected from the group consisting of di-tert-butyl peroxide, dicumyl peroxide, and di-benzoyl peroxide (column 9, lines 19-34);

(24) wherein silicon compound B is applied by spraying, dipping, drenching, brushing, polishing, rolling, doctoring, CVD, or PVD (column 10, lines 1-20; column 8, lines 23-37);

(25) further comprising heat treating the organofunctional substrate after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional substrate, after applying the organofunctional silicon compound B to the polar treated surface or both (column 9, lines 13-67);

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(26) wherein the organofunctional substrate is heat treated from 80 to 120°C for from 0.5 to 2 hours after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional substrate (column 9, lines 13-67);

(27) wherein the organofunctional substrate is heated from 100 to 200°C for from 0.5 to 2 hours after applying the organofunctional silicon compound B to the polar treated surface (column 9, lines 13-67);

(29) wherein one or both of the silicon compounds A and B is an organosilane of the general formula I (*see claim for details*) or an organosiloxane based on at least one organosilane of the general formula I (column 3, line 23 through column 4, line 4; column 5, lines 20-44);

(30) wherein one or both silicon compounds A and B is present in monomeric, oligomeric, co-condensed, dissolved, emulsified, or suspended form (column 3, line 23 through column 4, line 4);

(31) wherein the organofunctional substrate comprises a plastic, a fiber or a natural substance (column 10, lines 9-15);

(32) wherein the organofunctional substrate is selected from the group consisting of (*see claim for list*) (column 10, lines 9-15); and

(51) which comprises addition of a base selected from the group consisting of an amine,  $\text{Na}_2\text{CO}_3$ ,  $\text{NaOH}$ ,  $\text{NH}_4\text{Cl}$ ,  $\text{CH}_3\text{COONa}$ , and  $\text{CH}_3\text{COONH}_4$  (column 6, lines 56-67).

Regarding claims 36 and 4-11, 13-16, 18, 19, 37-46, and 50, Popall et al. disclose: (36) a process for modifying the surface of an organofunctional substrate (Abstract; column 10, lines 1-20):

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- Applying a silicon compound A to the surface of an organofunctional substrate (column 10, lines 1-20; column 8, lines 23-37), wherein the silicon compound A comprises at least two organofunctional groups and comprises at least one hydrolyzable group selected from the group consisting of chloro, alkoxy, carboxy or hydroxyl group; wherein at least one of the organofunctional groups is capable of undergoing a crosslinking reaction upon exposure to UV radiation; and further wherein said silicon compound A is capable of forming a polymer bearing a silyl group (column 3, line 23 through column 4, line 9; column 4, line 64 through column 5, line 20);
- Reacting an organofunctional group of the silicon compound A with the surface of an organofunctional substrate to form a polar treated surface (column 10, lines 1-20; column 8, lines 23-37);
- Exposing the polar treated surface to UV radiation to initiate crosslinking between the at least one of the organofunctional groups of the silicon compound A capable of undergoing a crosslinking reaction upon exposure to UV radiation (column 9, lines 19-67);
- Applying to the polar treated surface a silicon compound B (column 10, lines 1-20; column 8, lines 23-37), said silicon compound B comprising at least one organofunctional group and at least one hydrolyzable group selected from the group consisting of chloro, alkoxy, carboxy or hydroxy group; wherein the silicon compounds A and B may be identical or different (column 3, line 23 through column 4, line 9),
- Reacting the silicon compound B to the polar treated surface (column 10, lines 1-8)



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wherein the organofunctional group of the silicon compound A is reacted with the surface of the organofunctional substrate by the addition of an acid or base (column 6, lines 37-67) and in the presence of a solvent or in the presence of a free radical generator, or both (column 8, lines 38-43; column 9, lines 19-67), and

wherein the acid or base is selected from the group consisting of HCl, HNO<sub>3</sub>, HCOOH, CH<sub>3</sub>COOH, H<sub>3</sub>PO<sub>4</sub>, H<sub>2</sub>SO<sub>4</sub>, and amine, Na<sub>2</sub>CO<sub>3</sub>, NaOH, NH<sub>4</sub>Cl, CH<sub>3</sub>COONa, and CH<sub>3</sub>COONH<sub>4</sub> (column 6, lines 56-67);

(4) wherein at least one the organofunctional group of the silicon compound A is a linear, branched or cyclic alkyl group having from 1 to 20 carbon atoms and may optionally be substituted with a halogen or an alkenyl group having from 2 to 16 carbon atoms (column 4, line 64 through column 5, line 20);

(5) wherein at least one organofunctional group of the silicon compound A is reacted with the surface of the organofunctional substrate by the addition of an acid or base (column 6, lines 37-67) and in the presence of a solvent or in the presence of a free radical generator, or both (column 8, lines 38-43; column 9, lines 19-67);

(6) which comprises the addition of an acid selected from the group consisting of HCl, HNO<sub>3</sub>, HCOOH, CH<sub>3</sub>COOH, H<sub>3</sub>PO<sub>4</sub>, and H<sub>2</sub>SO<sub>4</sub> (column 6, lines 56-67);

(7) wherein the free radical generator is selected from the group consisting of di-tert-butyl peroxide, dicumyl peroxide, and di-benzoyl peroxide (column 9, lines 19-34);

(50) which comprises addition of a base selected from the group consisting of an amine, Na<sub>2</sub>CO<sub>3</sub>, NaOH, NH<sub>4</sub>Cl, CH<sub>3</sub>COONa, and CH<sub>3</sub>COONH<sub>4</sub> (column 6, lines 56-67)

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(8) wherein silicon compound B is applied by spraying, dipping, drenching, brushing, polishing, rolling, doctoring, CVD, or PVD (column 10, lines 1-20; column 8, lines 23-37);

(9) further comprising heat treating the organofunctional substrate after reacting the organofunctional groups of the silicon compound A with the surface of the organofunctional substrate, after applying the organofunctional silicon compound B to the polar treated surface or both (column 9, lines 13-67);

(10) wherein the organofunctional substrate is heat treated from 80 to 120°C for from 0.5 to 2 hours after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional substrate (column 9, lines 13-67);

(11) wherein the organofunctional substrate is heated from 100 to 200°C for from 0.5 to 2 hours after applying the organofunctional silicon compound B to the polar treated surface (column 9, lines 13-67);

(13) wherein one or both of the silicon compounds A and B is an organosilane of the general formula I (*see claim for details*) or an organosiloxane based on at least one organosilane of the general formula I (column 3, line 23 through column 4, line 4; column 4, line 64 through column 5 line 20);

(14) wherein one or both silicon compounds A and B is present in monomeric, oligomeric, co-condensed, dissolved, emulsified, or suspended form (column 3, line 23 through column 4, line 4);

(15) wherein the organofunctional substrate comprises a plastic, a fiber or a natural substance (column 10, lines 9-15);

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(16) wherein the organofunctional substrate is selected from the group consisting of (*see claim for list*) (column 10, lines 9-15);

(18) a product comprising a surface modified substrate produced by the process as claimed in claim 36 (column 10, lines 9-15);

(19) a process for repelling water, oil, dirt, dust, paint, microorganisms or bacteria comprising incorporating a substrate obtained by the process as claimed in claim 36 as a coating on an article (column 10, lines 9-15);

(37) wherein said silicon compound A comprises at least one hydrolyzable group which is chloro (column 4, line 64 through column 5, line 19);

(38) wherein said silicon compound A comprises at least one hydrolyzable group which is alkoxy (column 4, line 64 through column 5, line 19);

(39) wherein said silicon compound A comprises at least one hydrolyzable group which is carboxy (column 4, line 64 through column 5, line 19);

(40) wherein said silicon compound A comprises at least one hydrolyzable group which is hydroxyl (column 4, line 64 through column 5, line 19);

(41) wherein said silicon compound B comprises at least one hydrolyzable group which is chloro (column 4, line 64 through column 5, line 19);

(42) wherein said silicon compound B comprises at least one hydrolyzable group which is alkoxy (column 4, line 64 through column 5, line 19);

(43) wherein said silicon compound B comprises at least one hydrolyzable group which is carboxy (column 4, line 64 through column 5, line 19);

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(44) wherein said silicon compound B comprises at least one hydrolyzable group which is hydroxyl (column 4, line 64 through column 5, line 19);

(45) wherein said silicon compound A and said silicon compound B are the same (column 10, lines 1-8; column 3, line 23 through column 4, line 9; column 4, line 64 through column 5, line 20); and

(46) wherein said silicon compound A and said silicon compound B are different (column 10, lines 1-8; column 3, line 23 through column 4, line 9; column 4, line 64 through column 5, line 20).

***Claim Rejections – 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Popall et al. (US Pat. No. 5,734,000) in view of Moncur et al. (US Pat. No. 5,378,535).

Regarding claims 12 and 28, Popall et al. do not disclose a pre-cleaning of the substrate in their method.

Moncur et al. disclose an organosilane primer system for silicone elastomers bonded to glass or plastic substrates (Abstract), wherein the primer consists: a) of a thin layer of a silica-based adhesion promoter which is applied directly to the substrate, and b) an organosilane primer containing (i) silanol or functional groups that can be hydrolyzed to silanol, and (ii)

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polymerizable alkene or silicone hydride functional groups, applied over the adhesion promoter layer (Abstract). They also disclose, "The substrates are preferably cleaned using techniques known in the art before the primer systems of the present invention are applied," (column 3, lines 12-15). Such a cleaning step would have eliminated dirt or other contamination on the substrate surface to ensure strong bonding of the primer system to the substrate. They do not explicitly disclose the use of at least one acidic aqueous solution, basic aqueous solution, acid alcoholic solution or basic alcoholic solution; however, one skilled in the art would have appreciated that these cleaning solutions would have been "suitable techniques known in the art," in order to clean the substrate surface.

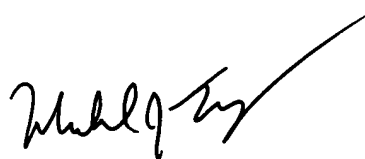
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to pre-clean the substrate, as taught by Moncur et al., in the method of Popall et al. because Moncur et al. teach a coating method analogous to that of Popall et al. wherein the substrates are preferably cleaned using techniques known in the art before the primer systems are applied, resulting in the elimination of dirt or other contamination on the substrate surface to ensure strong bonding of the primer system to the substrate.

*Communication*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Michael J. Feely', with a long, sweeping horizontal line extending to the right.

Michael J. Feely  
Primary Examiner  
Art Unit 1712

May 12, 2005